

**Measurement of the Momentum Transfer Dependence
of Quasielastic ($e,e'p$) Scattering
at Large Momentum Transfer and Large Missing Energy**

Submitted by

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ABSTRACT

We propose to measure the momentum transfer dependence of large missing energy strength in the quasielastic ($e,e'p$) reaction. Recent experimental data support the point of view that at large momentum transfers quasielastic ($e,e'p$) scattering from protons with initial momenta below the Fermi momentum and with missing energies below about 80 MeV are calculable in a Glauber framework, with a standard off-shell prescription for the electron-nucleon scattering and conventional initial-state wave functions. At missing energies above 80 MeV rescattering of the proton via inelastic channels, e.g. by pion production, will be significant. This experiment will measure the missing energy strength up to removal energies of 300 MeV, addressing the following questions:

- Can we understand the quasielastic ($e,e'p$) reaction at large momentum transfers AND large missing energies in a conventional framework?

- If so, what is the average removal energy for a proton in a nucleus?

The momentum transfer dependence and the A dependence of the quasielastic ($e,e'p$) reaction will be measured for four targets, ^2H , ^4He , ^{12}C , and ^{58}Ni , for momentum transfers between 1.9 and 8.7 $(\text{GeV}/c)^2$. For momentum transfers below 6.2 $(\text{GeV}/c)^2$ we only propose kinematics to measure that part of the missing energy region which is not covered by approved proposals PR91-007 and PR91-013. The collaboration includes the principals of these proposals. The experiment will use the coincidence spectrometer pair in Hall C to detect the scattered electron and the knocked-out proton.